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Treatment Manual

Chemical Treatments

Fumigants • Methyl Bromide • Structure Fumigation

Contents

Methods and Procedures

The procedures in this section provide guidelines for the methods, responsibilities, and precautions for structure fumigation. These procedures relate to structure fumigation primarily for khapra beetle.

In general, structure fumigations present problems not encountered in other types of fumigations. The large amount of gas required and the fact that the structure configurations vary from structure to structure make it essential that experienced fumigators and PPQ officers with extensive fumigation experience perform structure fumigations.

Materials Needed

PPQ Officer Provides

- Calculator (optional)
- Colorimetric tubes (Draeger/Kitagawa)
- Desiccant (Drierite®)
- Forms (PPQ Form 429 and APHIS Form 2061 if necessary)
- Halide leak detector
- SCBA or supplied air respirator
- Tape measure
- Thermal conductivity unit[1]
- Thermometer

Fumigator Provides

- Adhesive sealer, tape, and putty or other pliable material for sealing off holes around pipes
- Auxiliary pump for purging long gas sample tubes
- Carbon dioxide filter (Ascarite®)
- Colorimetric tubes (Draeger/Kitagawa)
- Device for adding nitrogen into MB cylinders
- Electrical wiring (ground, permanent type), three prong extension cords
- Exhaust blower and ducts
- Fans (circulation, exhaust, and introduction)
- Framework and supports
- Gas sampling tubes (leads)
- Gas supply line
- Heat supply
- Insecticides and spray equipment
- Methyl bromide
- Padding
- Portable generator as backup unit to operate T/C unit, auxiliary pump, and lights

1 T/C unit must be calibrated annually by the Oxford Plant Protection Laboratory. If requested, the Oxford Plant Protection Laboratory will calibrate a commercial fumigator's T/C unit.

- Sand or water snakes
- Scales or dispensers
- SCBA or supplied air respirator
- Tape
- Tarpaulin and supports
- Thermal conductivity unit
- Volatilizer
- Warning signs

Taking Safety Measures When Fumigating Structures

The most important consideration when fumigating structures is the protection of human life. The commercial fumigator has the following safety responsibilities when fumigating structures:

- Observe all safety precautions while fumigating
- Prevent access of unauthorized personnel to the fumigated area
- Conduct fumigation properly to result in an effective treatment
- Evacuate gas from the structure and aerate when fumigation is completed
- Test, with a gas detector, the fumigated areas within the structure to ensure freedom from MB before allowing access to the fumigated areas

The commercial fumigator must abide by the following guidelines when fumigating structures:

- Have a representative present throughout the entire fumigation. The representative should be familiar with the directions for using the fumigant, warnings, antidotes, etc., shown on the label, on the gas cylinder, and contained in the manufacturer's application manual.
- Have adequate first-aid equipment, SCBA, and other safety equipment available
- Have all fumigated areas and any adjoining areas that were not fumigated tested with a gas detector prior to worker re-entry
- Contact all necessary local and State authorities (fire, police, etc.)

Preparing to Fumigate

Step 1—Determining Type of Treatment Required

Consider the following factors in selecting a treatment for the structure:

- Type of commodities involved (example—grain, spices, or flour)
- Degree of infestation (light, moderate, heavy)
- Potential risk of spread from infestation
- Nature of the business—business shipping materials that could spread pest (example—a spice wholesaler or specialty foods distributor)
- Availability of food supply—is food available or is the find incidental
- Type of structure(s) infested
- Environmental conditions—warm, humid areas favor reproduction

In locations where reproduction occurs, or the potential for reproduction exists (warm temperature, humidity, and available food supply), seriously consider fumigation. Fumigation is not mandated every time an infestation is found.

In locations where reproduction is not occurring or the potential for reproduction does not exist (unfavorable temperature, low humidity, and no available food supply), consider using alternative treatments.

Make the final determination of which type of treatment to use with the concurrence of the following:

- PPQ line (Officer in Charge and Regional Director)
- PPQ staff (Riverdale/Oxford)
- Responsible State regulatory official

Options consist of the following:

- Complete Property Fumigation and Treatment (Category 1)
- Selective Property Fumigation and Treatment (Category 2)
- Interior Fumigation (Category 3)
- Alternate Treatment (Category 4)
- Selective Property Fumigation plus Alternative Treatments (Category 5)

The following is a detailed description of each of the above options:

Category 1—Complete Property Fumigation and Treatment

Fumigate all structures of similar usage on a single property. Place all structures under a gastight tarpaulin(s) and fumigate with MB.

Spray the area surrounding the structure(s) within the confines of the property at least twice with a registered malathion formulation. Make the last application after covering the structure(s) with the tarpaulin.

Free the surface area of all debris by raking or sweeping all debris toward the structure, include the debris under the cover.

Depending upon local conditions as determined by the PPQ Officer in Charge and the responsible State regulatory official, you may unconditionally release the structure after fumigation or hold the release until a series of inspections are conducted as outlined in Category 2.

Category 2—Selective Property Fumigation and Treatment

This treatment is similar to Category 1 except not all structures of related usage are fumigated and the fumigation is followed by at least three inspections of the entire property.

Notify the owner of the establishment in writing on the PPQ Form 523 (Emergency Action Notification) of the inspection requirement prior to fumigating any structures (see Appendix A). To verify success of this treatment, conduct at least three inspections of the entire property within 1 year. In the Northeast and other cooler regions, inspections must extend through two summer seasons when khapra beetles are active. Allow at least 90 days to elapse between inspections. Make the last inspection within 30 days of the time the structure is to be released.

Category 3—Interior Fumigation

Treat all structures on the premises or only those structures known to be infested. Use interior fumigation when conditions make the use of complete fumigation impractical. Conduct three inspections of the property after the fumigation has been completed.

This method of fumigation is less desirable because khapra beetles may crawl into cracks, crevices, and other openings on both the interior and exterior of an infested structure. Seal all openings in the structure with masking tape, putty, polyethylene, or other materials from the outside of the structure. Make the structure as airtight as possible without sealing out any areas that may harbor khapra beetle.

Spray the area surrounding the structures or the structures within the confines of the property at least twice with a registered malathion formulation. Make the last application after sealing the structure prior to fumigation. Free the surface area of all debris by raking or sweeping all debris toward the building. Include the debris in the fumigated structure.

Notify the owner of the establishment in writing on the PPQ Form 523 (Emergency Action Notification) of the inspection requirement prior to fumigating any structures (see "Appendix A" on **page-1-A-1**). To verify success of this treatment, conduct at least three inspections of the entire property within 1 year. In the Northeast and other cooler regions, inspections must extend through two summer seasons when khapra beetles are active. Allow at least 90 days to elapse between inspections. Make the last inspection within 30 days of the time the structure is to be released.

Category 4—Alternative Treatment

Use alternative treatments in infested properties where little or no regulatory hazard exists (little or no chance for the pest to escape and spread). Typically, such properties may include unused structures or buildings, facilities that do not handle commodities or materials of regulatory significance, or facilities that by the nature or type of operation or for other reasons do not pose a regulatory hazard as a result of the commerce conducted there.

Alternative treatments include either a crack and crevice or broadcast application of a registered or exempt pesticide (including approved cleaning and sanitation prior to treatment) and may include one or more of the following procedures:

- A specified program of sanitation
- An extensive trapping program utilizing adult and larval traps treated with both an attractant and an insecticide
- The use of bait treated with an insecticide
- An intensive, repeated inspection program augmented by intensive larval and adult trapping

Apply one or more of the above treatments when the Port Director, Plant Health Programs in Riverdale, and the responsible State regulatory official believe treatment will result in eradication and no regulatory hazard.

Category 5—Selective Property Fumigation Plus Alternative Treatments

Fumigate selected structures with related usage on a single, infested property. Apply one or more alternative treatments to all structures which are on the property and are not fumigated.

Step 2—Issuing a PPQ Form 523 (Emergency Action Notification)

Once an infestation of khapra beetle is identified and confirmed by a PPQ area identifier, issue a PPQ Form 523 (Emergency Action Notification) to the owner of the premises, except when treatment is ordered under State or county regulations. Follow instructions in Appendix 1 for completing and distributing PPQ Form 523 (Emergency Action Notification).

Be sure to document the treatment selected plus any alternative treatments, inspections, and safeguards to be applied.

Step 3—Conducting Prefumigation Conference

Fumigating a structure presents problems not usually encountered in other types of fumigations. The quantity of fumigant, supplies, equipment needed, and the variations in building configurations make it essential that experienced commercial fumigators and PPQ officers conduct structure fumigations.

Arrange a meeting with the fumigator to discuss the conditions of the treatment. Discuss the following items:

- An accurate measurement of the cubic capacity (volume) of the enclosure.
- Fumigation schedule to be used.
- Adequate tarpaulin material—polyethylene or equivalent tarpaulin of 6 mil or greater thickness.
- Electrical power source sufficient to operate circulation fans and T/C unit.
- Gas sampling tubes—types and number.
- Auxiliary air pump—to quickly draw samples through gas sampling tubes.
- Pedestal type fans for fumigant distribution and aeration.
- Sufficient quantity of fumigant for initial dosage plus an additional amount of fumigant in case gas must be added.
- Commodities involved and identification of materials that may be adversely affected by the fumigant (see Methyl Bromide—Properties for a list of commodities). Advise the property owner of any possible adverse effects. Articles or materials that may be damaged should be subjected to an alternate treatment if possible. Office furniture and equipment with foam rubber can be affected and should be removed. Computer equipment may have to be completely sealed with polyethylene and a positive pressure maintained within the sealed enclosure during the exposure period.

- Provide a sheltered area for taking gas concentration readings. The area should be located a safe distance (30 feet or more) from the enclosure. All gas sampling tubes and the electrical source should be located within the sheltered area.
- Aeration of structure and commodities.
- Final release—This is the responsibility of the fumigator unless the structure contains commodities requiring a Section 18 Exemption.

In addition to the above, explain to the fumigator that it is the fumigator's responsibility to perform the fumigation in a manner which meets required treatment schedule, treatment procedures, and pest safeguards prescribed by the PPQ officer. The fumigator is also responsible for meeting all Federal, State, and local regulations. The fumigator must notify local fire, police, and health officials as required. The fumigator is also responsible for making arrangements for utility services such as electricity, telephone, and water.

Your responsibility is to determine that the prescribed procedures are followed, actually checking volume and dosage calculations, dosage applications, and that the required gas concentrations are maintained. When food commodities are involved, you must notify the local Food and Drug Administration (FDA) office so they can collect residue samples if they deem it necessary.

Step 4—Preparing Areas to Be Fumigated

In order to ensure uniform gas distribution and penetration, you may require commodities within the structure to be restacked. Place dense commodities such as flour and similar bagged commodities on pallets or other supports to improve gas circulation.

In the outside surrounding area, rake the surface area of all debris by raking the debris toward the structure.

Step 5—Arranging and Operating Fans

Use fans capable of 2,500 cfm or greater during gas introduction and for 30 minutes following gas introduction. Extend fan operation only if gas distribution is inadequate (concentration readings vary more than 4 oz.), or you need to add gas. If you must operate fans after the 30 minute reading, do so for the least amount of time required to get equal gas distribution.

Placing fans is largely determined by the configuration of the structure and the absence or presence of cargo, its nature, and quantity. Pedestal fans are preferred for large structures. Direct fan air movement upward to complement other fans and assure even gas distribution in every area of the enclosure. There is no definitive rule for determining the proper number of fans, but both you and the

commercial fumigator must be satisfied that circulation will be adequate for both gas introduction and recirculation. Extremely tall buildings may require fans at several levels to ensure gas distribution to the top of the structure. Arrange the electrical source and extension cords of the fan system so the fans can be turned on and off individually from the outside of the enclosure.

Step 6—Placing Gas Sampling Tubes

Place gas sampling tubes in areas and commodities which will give representative samples of the gas concentration within the fumigated area. All gas sampling tubes must be 0.25 inch interior diameter polyethylene tubing.

The recommended number of sampling tubes is as follows:

TABLE 2-7-1: Deterimne the Number of Sampling Tubes

If the size of the enclosure is:	Then use:
500,000 ft^3 or less	Six sampling tubes for the first 100,000 ft^3, and Add one tube for each additional 50,000 ft^3
Greater than 500,000 ft^3	Fourteen sampling tubes for the first 500,000 ft^3, and Add one tube for each additional 200,000 ft^3

In addition to the number of sampling tubes described above, you must place sampling tubes within commodities stored in the structure. Place the sampling tube as near as practical to the center of the packaging (example—boxes, bags, or bins). Before placing the sampling tube in the commodity, wrap a piece of burlap over the end of the sampling tube and secure the burlap to the tube with tape.

Use a minimum of three tubes for the first 10,000 ft^3 of commodity. Use additional tubes to assure sampling of all types of tightly packed and difficult to penetrate commodities. Take care in placing sampling tubes to avoid clogging or pinching. Label each sampling tube with the location. Indicate if tube is in a commodity prior to fumigation and at the point where the concentration readings will be taken. For safety purposes, the gas sampling tubes should extend a minimum of 30 feet up-wind from the enclosure. You should have extra tubing on hand to extend beyond 30 feet if necessary.

Step 7—Measuring the Temperature

Take temperature readings of the air (space) and of the commodity. Use a calibrated thermometer. Record the temperatures in Block 22 on the PPQ Form 429. If the temperature is below the minimum listed for the treatment schedule, then you will have to heat the space to be fumigated or wait until the temperature rises to the level required by the schedule treatment.

Step 8—Sealing the Structure

Depending upon the method of fumigation, interior fumigation or tarpaulin fumigation, the effort required in this step will vary greatly.

Tarpaulin Fumigation

Locate and seal all openings which have the potential to leak gas. Since the entire structure will be tarped, do not cover openings to the exterior of the structure such as doors, windows, and air vents. Look for and seal all openings which may lead outside the structure such as manhole covers, drain pipes, and vent pipes. Seal these types of openings with polyethylene, tape, putty, or a combination of these materials. Do ***not*** seal out recessed areas, ducts, or similar areas which may harbor an infestation.

The structure or portion to be fumigated must be transformed into a gastight fumigation enclosure. This is accomplished by covering the entire structure with a 6 mil or greater, polyethylene tarpaulin. Tarpaulins may be joined together with mastic and tape or rolled and clamped together.

Have padding, such as burlap, placed on all corners of the structure and in any area where the tarpaulin may rub against rough or sharp edges of the structure.

Interior Fumigation

One of the most important steps in preparing for a structure interior fumigation is sealing all openings and areas which have the potential to leak gas. Consider the entire area to be fumigated as a natural atmospheric chamber and make the area as gastight as possible. The most important task is to locate all openings (example—drain pipes, or air ducts) and seal them.

Do ***not*** seal out or make gastight recessed areas, ducts, or similar apertures which may harbor infestations. In some cases, it is better to seal sources of leaks from the outside of the area to be fumigated. Use caulk compound or tape for sealing small spaces. For sealing larger areas, use polyethylene or similar material secured with tape or adhesive spray. Seal doors and other openings with either polyethylene or spray with vinylite plastic. When practical, seal air ventilation ducts on the outside of the space being fumigated so sealing tape can be removed when you get ready to evacuate the gas and begin aeration. Large openings should be covered with polyethylene and securely taped.

Step 9—Measuring Volume

For rectangular and square shaped buildings, multiply the length, width, and height. If the buildings are irregular, the volume of each unit can best be calculated separately and then added together.

Step 10—Calculating Dosage

The formula for calculating dosage is:

$$\text{dosage(lbs.)} = \text{volume(ft}^3\text{)} \times \text{dosage rate(lbs./1,000 ft}^3\text{)}$$

$$= \frac{\text{volume(ft}^3\text{)} \times \text{dosage rate(lbs.)}}{\text{1,000 ft}^3}$$

EXAMPLE: A structure infested with khapra beetle has a volume of 100,000 ft^3. The space and commodity temperature is 65 °F. The treatment schedule requires 6 lbs. MB/1,000 ft^3 at 65 °F. To calculate the dosage multiply the volume (100,000 ft) by the dosage rate (6 lbs. MB/1,000 ft). This equals 600 lbs. of MB needed for the dosage.

Step 11—Placing the Gas Introduction Line(s)

Introduce MB from the outside of the building with the introduction line going under the tarpaulin and directly into the airstream in front of a fan. Use the "hot gas" method of gas introduction by passing the fumigant through volatilizers after it leaves the cylinders. Depending upon the size of the structure being fumigated, you may want to have several gas introduction lines going into the structure to shorten the time required for gas introduction. Attach introduction lines to the top of the fans to prevent movement of the hose. Place a piece of nonpermeable sheeting (example—plastic or rubberized canvas) over the commodity in front of and below each gas introduction line. The sheet will prevent any liquid MB from coming in contact with the cargo and will prevent damage.

The other option of gas introduction is to release MB from inside the building. If this option is selected, cylinders should be placed by a team of two people and the location of each cylinder in the building should be mapped. The cylinders should be arranged so that fumigators can walk away from the released gas as they open each subsequent cylinder.

Because MB is heavier than air, it is advisable to increase slightly the amount of gas released on the top floor. Cylinders should be placed within a room for best distribution into all areas. Cylinders should be placed in an upright position and the shipping caps removed.

Because MB is heavier than air, it is advisable to attach standpipes (or curved pipes directed slightly upward) to the cylinder valves in order to reduce stratification at lower levels in the structure. If standpipes are used, they should be equipped with "T" fittings to direct the gas laterally and to prevent direct contact with the ceiling.

If the "inside release" option is used, provision must be made to have equipment in place to use the gas method of hot gas introduction to add fumigants as necessary to all areas of the structure.

You must be present during the introduction of the fumigant to ensure that the correct dosage is introduced into the enclosure.

Step 12—Making a Final Check

Just before introducing the gas, you and the fumigator must do the following:

- Make sure building is clear of all personnel and animals
- Make sure all areas requiring sealing are sealed
- Check the placement and identification of gas introduction lines and gas sampling tubes
- Turn on all fans and T/C unit to make sure they work
- Check that the tarpaulin is placarded with warning signs on all sides of the building
- Take T/C unit readings to determine if any contaminant gases are present (contaminant gases may affect concentration readings)
- Check that all gas sampling tubes are labelled and not crimped or crushed by attaching to T/C unit and watch the air flow meter to ensure that air is getting through
- Check that there is enough gas for dosage and additional gas in case you need to add gas
- Start volatilizer and heat water to at least 200 °F or above
- Place fumigant cylinders with gas introduction line on scale and take initial weight reading. Make sure the gas introduction line is attached to the cylinder. After obtaining the correct weight, subtract the dosage to be introduced into the enclosure. When you have introduced the proper amount of gas, the scale will be balanced
- Check gas introduction line connections to make sure they are tight
- Install Drierite® tube on gas sampling lines of T/C unit making sure the Drierite® granules are blue in color and have not turned pink
- Make sure all safety equipment is present and in working order

Conducting the Fumigation

Step 1—Introducing the Gas

CAUTION

You and the fumigator must wear the SCBA whenever:

- Concentration exceeds 5 ppm
- The concentration level is unknown, as with spills, leaks, and other emergencies
- Introducting gas
- Checking for leaks
- Taking aeration readings

In addition, the PPQ Officer must wear SCBA when they are within 30 feet of the enclosure.

Turn on all fans before introducing the gas. When using large cylinders of MB, have the fumigator slightly open the cylinder valve then close the valve. Using a halide detector, check all connections on the gas introduction line for leaks. If leaks are found, have the fumigator tighten the connections and repeat the test. Also, check all areas which are sealed. If you find a leak and it cannot be readily corrected, evacuate this partial dosage and reseal the area. If no leaks are found, then open the valve to the point where 3 to 4 pounds of MB are being introduced per minute. The gas introduction line should always be hot and the volatilizer should read at least 150 °F.

CAUTION

Do not touch the introduction line with your bare hands—you may get burned! Close the cylinder valve once the proper dosage has been introduced.

The fumigation time begins once all the gas has been introduced. Record the time gas introduction was started and completed in Block 32 on the PPQ Form 429. Run the fans for 30 minutes after all gas has been introduced. You will take the initial concentration reading 30 minutes after all the gas has been introduced.

When using large cylinders, getting the final amount of gas out of the cylinder may take a long time. Using a pressurized cylinder will shorten the time. Consider taking a T/C unit reading 30 minutes after the gas was first introduced. If the gas distribution is even (all readings within 4 ounces of each other) and at a sufficiently high concentration, then turn off the fans. Running the fans longer may contribute to gas leakage. Allow the remainder of the gas to discharge at its slow rate with intermittent running of the fans for dispersal.

Step 2—Testing for Leaks

Wear the SCBA while checking for leaks. Use a halide detector to test for leaks before the 30 minute reading. Test around the perimeter of the tarpaulin on the ground, corners, and especially where electric cords, gas sampling tubes, or gas introduction lines are present. If you detect leaks, be sure they are sealed by using more sand or water snakes for floor leaks and tape for small holes in the tarpaulin.

Step 3—Taking Concentration Readings

Take concentration readings with a T/C unit to determine the gas concentration and distribution within the enclosure. Check Drierite® tubes before each reading and change Drierite® if its color is pink. Depending upon the length of exposure period, take concentration readings at the following times after the introduction of the fumigant:

- 30 minutes
- 2 hours
- 4 hours
- 6 hours
- 12 hours
- 24 hours
- 36 hours
- 48 hours
- 72 hours

All times are after gas introduction is completed.

Use an auxiliary air pump when there are many gas sampling tubes or the gas sampling tubes are very long. The auxiliary air pump will lessen the time required to draw gas to the T/C unit.

You may start the final reading 30 minutes to 1 hour prior to completion of the exposure period. If final gas concentration levels meet minimum levels, start aeration immediately at the end of the exposure period.

Additional Readings

Adverse weather conditions may indicate the need for additional readings. Sorptive commodities and indications of a steady decline in gas concentration also indicate the need to take additional concentration readings.

Step 4—Adding Gas

For concentration readings below minimum levels, add gas at the following rate:

1.6 × number of oz. below × volume/1,000 = oz. of fumigant to add

Once you've determined that you need to add gas, follow the same procedures as introducing the gas (Step 1). That is—

1. Heat water in the volatilizer to at least 200 °F.
2. Turn on the fans.
3. Weigh the cylinder.
4. Use your SCBA.
5. Open valve on cylinder and introduce the gas.
6. Close valve when the weight of the cylinder indicates that the needed amount of gas has been added.
7. Record quantity of fumigant added in Block 34 on the PPQ Form 429.

Note the time you started introducing additional gas and the time you finished introducing gas and record in Block 40 (Remarks) on the PPQ Form 429. Run the fans until you get even gas distribution throughout the enclosure. Turn off the fans, then take a concentration reading 30 minutes after you complete introducing the gas. If all readings are above minimum concentration levels, then proceed as usual with the remainder of the concentration readings. If gas is not evenly distributed (readings not within 4 oz. of each other), then run fans until you get gas evenly distributed.

Step 5—Exhausting the Gas

Exhaust the gas at the completion of the exposure period. The aeration of the structure and the final release to the owner is the responsibility of the commercial fumigator unless under a Section 18 Exemption. Exhausting the fumigant is facilitated by partially removing the tarpaulin and the use of suction fans which are supplied with ducts leading from the enclosure to the outside. The fumigant should be evacuated to the outside, downwind areas of the enclosure. The fumigator must be certain that the removal of the covers and ventilation is done in a manner that minimizes the hazard from the released gas.

Aerating the Enclosure

TABLE 2-7-2: Determine the Responsibility for Monitoring the Aeration

If the treatment schedule is:	Then:
A FIFRA Section 18 Exemption	MONITOR the aeration of the commodity. FOLLOW "Aerating the Enclosure" steps which follow.
A labelled treatment	RELEASE the commodity and RELEASE the fumigation to the fumigator.

Step 1—Securing the Area

Assuming that you've already restricted access and secured the fumigation area, you now must restrict access to the area where the exhaust duct extends beyond the enclosure. During the first 10 minutes of aeration, there should be no people within 200 feet of the exhaust duct outlet. When securing the duct outlet area, consider the direction of the wind. Face the duct outlet toward an open area and away from people. Point the duct outlet upward to aid in dispersing the exhaust gas.

Have the fumigator use a physical barrier such as ropes, barricades, or walls to secure the area.

Placard the secure area near the exhaust outlet with the appropriate DANGER/PELIGRO signs. Make sure the placards meet the appropriate fumigant label or labeling requirements. The skull and crossbones should be present as well as "AREA UNDER FUMIGATION, DO NOT ENTER/NO ENTRE"; date of the fumigation; name of the fumigant used; and the name, address, and telephone number of the fumigator.

Unless you authorize their use, do ***not*** allow motorized vehicles to operate within the secure area.

Step 2—Aerating the Structure

Wearing the SCBA, have the fumigator open slightly the opposite end of the enclosure to allow entry of fresh air. The fumigator may open doors, tarpaulins, and areas to facilitate aeration. Start the exhaust system (minimum 2,500 cfm exhaust fan connected to an exhaust duct) and aerate the structure.

Important

The PPQ officer is not required to be continuously onsite during the entire aeration unless specified by the label, Section 18 Exemption, or State or local regulations. The officer must verify the gas concentration levels before removal of the tarpaulin and final release of the structure.

Step 3—Taking Concentration Readings

Stop the aeration fans. Take a concentration reading with a colorimetric tube in the exhaust duct within 2 feet of the enclosure. If the concentration is above 5 ppm but less than 100 ppm (for MB), the fumigator may remove the tarpaulin while wearing the SCBA. Release the structure when the concentration is 5 ppm or less after taking readings 4 feet from the floor and 1 foot inside the fumigation perimeter at several representative locations (a minimum of two are required). Record the date, concentration reading, and time on PPQ Form 429.